

Teacher's Notes

- Manhattan Project/Cold War activities resulted in contamination
- At the time, waste disposal met established criteria/standards
- However, as more environmental laws have been posted, we find that past practices do not meet today's standards
- We also realize that most of the contamination on the Reservation will remain in place
- Thus, a Stewardship program must be developed to ensure long-term protection of the public and the environment



What is Stewardship?

Acceptance of the responsibility to carry out the activities necessary to protect human health and the environment from radioactive and hazardous materials.

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Teacher's Notes

- Stewardship means different things to different people, so this definition was agreed upon so that everyone would be talking about the same thing
- Thus the OR stakeholders developed this definition in 1997 when it was realized that “cleanup” is an impossible goal
- Definition continues to guide the SSAB Stewardship efforts



Stewardship Became a Major Oak Ridge Issue in 1997

- Efforts of the End Use Working Group recognized that many contaminated properties would remain on the Reservation following remediation
- Oak Ridge stakeholders were reluctant to support this unless stewardship was assured

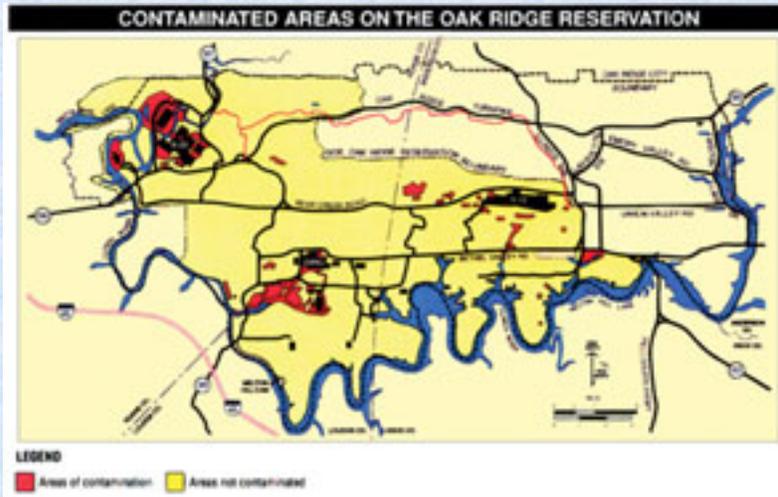
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Teacher's Notes

- In 1996 State told DOE & EPA that there needed to be citizen input on end use of contaminated areas on the reservation
- 1997, SSAB convened a citizen's group to provide input on future uses of contaminated areas
- The End Use Working Group studied problems and possible solutions and realized that for technical, safety, and budget constraints, contaminants would remain in place
- 1997 Stewardship Committee formed - 1st report published in 1998
1999 Stewardship Working Group - 2nd report published in 1999
- SSAB Stewardship Committee oversees DOE's stewardship activities and contributes to the development of a long-term stewardship program.
- DOE provided financial and technical support and the citizens and DOE, EPA, and the State worked together



What Is The Problem?



Teacher's Notes

- About 10% of 35,000 acre reservation is contaminated (4,000 acres)
- Contamination associated with 3 major facilities
- Most of the reservation is NOT contaminated
- Most of the contamination is onsite. However, there is:
 - a groundwater plume with carbon tetrachloride in Union Valley (Y-12)
 - Mercury in sediments in Poplar Creek (Y-12)
 - radioactive cesium, strontium, tritium in the Clinch River from White Oak Creek (Melton Valley)
- Stewardship in place:
 - property owners must notify DOE of any changes in surface/groundwater use in Union Valley
 - signage in Poplar Creek
 - White Oak Creek dam limits contaminant release to the Clinch River
- DOE continues to release low levels of contaminants under permits granted by the state, However, OR is one of the safest communities in the nation - well monitored, maintained, surveillance, emergency response



Some Major Known Contaminants on the Oak Ridge Reservation

CATEGORY	BEAR CREEK VALLEY	BETHEL VALLEY	EAST TENNESSEE TECHNOLOGY PARK	MELTON VALLEY	UPPER EAST FORK POPLAR CREEK
Contaminated Groundwater	uranium-235, uranium-238, nitrates	strontium-90, uranium, VOCs	TCE, PCE, TCA	strontium-90, tritium, VOCs	VOCs, nitrates, uranium-238, technetium-99
Contaminated Surface Water and Sediments	uranium, cadmium, nitrates	strontium-90, mercury, cesium-137	uranium-238, nickel, PCBs	tritium, strontium, cesium-137	metals, PCBs, radium & SVOCs in sediment
Contaminated Soils	uranium-235, uranium-238	cesium-137, mercury	uranium-238, nickel, PCE	cesium-137, PCBs, mercury, cobalt-60	mercury, uranium-238, radium-226, cesium-137 (low levels), PCBs, technetium-99
Buried Waste	uranium-235, uranium-238	strontium-90, cesium-137, cobalt-60, metals	uranium-238, PCE, TCE	strontium-90, tritium, transuranics, mixed waste	uranium-238, metals, VOCs, SVOCs, nitrates
Engineered Disposal Facilities	uranium-235, uranium-238	None	none	low-level waste, strontium, tritium	non-hazardous solid waste landfills on Chestnut Ridge
Containers in Storage	VOCs, PCBs	uranium-233	low-level waste, uranium, hexafluoride	transuranic waste	Uranium oxide vaults; uranium-235 in storage, uranium hexafluoride
Contamination in Structures in Use	None	strontium-90; cesium-137	uranium-238	transuranic and low-level waste	mercury; uranium; isolated beryllium
Contamination in Abandoned Structures	None	strontium-90, cesium-137	uranium-235, uranium-238, technetium-99	low-level waste	mercury, uranium

VOC = Volatile Organic Compound
TCE = Trichloroethene
TCA = Trichloroethane

SVOC = Semi-Volatile Organic Compound
PCE = Tetrachloroethene
PCB = Polychlorinated Biphenyl

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Teacher's Notes

- Overview of major contamination
- Shows kinds of contaminants
- Sources of contamination
- In the 5 watersheds
- Go to page 25 of Stakeholder Report on Stewardship Vol. 1 – July 1998, you can read about the contamination



What are the Issues?

- Remove all waste to someone else's backyard
- Remediate risk - hot spots first - use restrictions on remaining contaminated areas

Options	Volume of waste materials	Cost	Annual maint.	Stewardship
Removal-disposal off site	500-700M cubic yards	\$7-16B	\$0.5-1M	None, except groundwater controls and minimal monitoring
Remediation, excavation, caps, mostly onsite disposal	1-2M cubic yards	\$1B	\$12-16M	Access restrictions and use limitations of facilities and soil/groundwater

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Teacher's Notes

- Removal of all waste is not an option
- The second option is not static, overtime:
 - radioactivity decreases
 - organics are degraded naturally
 - new technologies for remediating contamination



Why Consider Stewardship Now?

- The long-term effectiveness of remedial actions depends on stewardship
- Stewardship plans should be working before remediation is completed to be sure that the plans run smoothly
- Therefore, stewardship issues must be resolved during remediation planning

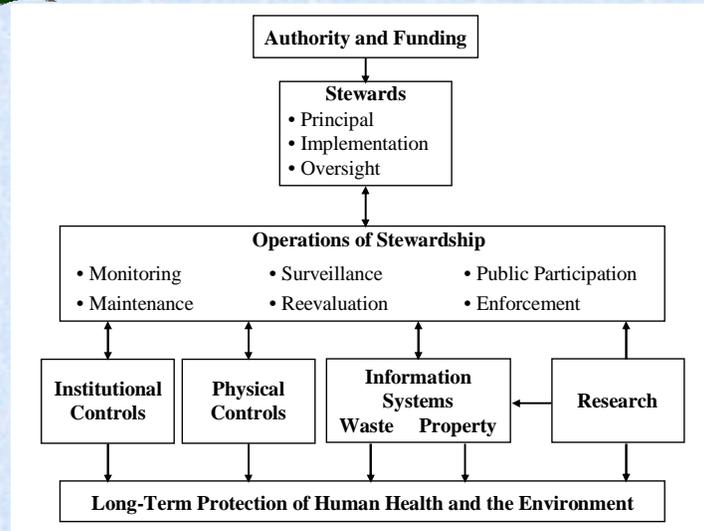
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Teacher's Notes

- If contamination remains, it must be monitored, remediation caps/barriers must be maintained, access must be restricted, *someone has to be responsible*
- Cannot wait until DOE completes remediation to talk about stewardship
- Requirements for long-term stewardship must be described in legally enforceable documents (i.e., CERCLA RODS) for the remedial actions
- Stewardship must be factored into the analysis of alternatives
- These issues were raised by the Stewardship Working Group in 1997 and described in the 1st Stewardship Report in July 1998
- Subsequent Stewardship activities at HQ and around the DOE complex are based on this early work of OR Stakeholders
- Including the most recent HQ draft policy and guidance for risk-based end states



Organization of Stewardship Elements



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Teacher's Notes

- Talk briefly about each element - give examples (I like to start at the bottom, then go to the top and work down)



Where are we Now?

- Remediation studies mostly completed
- Remediation underway in all watersheds
- Anticipate completion by 2016 – *however, with accelerated cleanup ETTP will be finished in 2006 and Melton Valley in 2008*

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Teacher's Notes

- So, where are we now? Your guess is as good as mine.
- In _____ Oak Ridge produced a draft strategic plan. Put on hold until HQ could develop its plan.
- HQ produced a “Report to Congress” on LTS in Jan. 2001
- Then in _____, the National Academy of Science in response to the above
- Since then – HQ has recognized LTS and produced several major LTS documents
- But policy and guidance for LTS is still lacking
- And now there will no longer be an HQ Office of LTS
- And a new Office of Legacy Management is in the works and who knows what that means?



Summary of the Next Steps for Stewardship

- Acceptance of the *responsibility* for long-term stewardship
- Development of a national *policy*
- Get authorization for funding separate from remediation funding

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Teacher's Notes

- Responsibility : DOE accepted, State & EPA lagging. City not yet a real player
- Policy: HQ issuing policy in pieces
- Funding: Mention problems w/annual appropriations - talk about state fund for oversight of waste cell. RFF report
- Regardless of what happens in D.C. the local stakeholders, local government, and citizens must think and plan locally for LTS and get HQ to recognize the needs of the community. These next steps for stewardship are even more important now, because of accelerated cleanup.
- The Stewardship Committee will make recommendations for information systems in March or April



Next Steps (cont.)

- Development of a better understanding of the *tradeoffs* between cleanup and stewardship
- Development of guidance for site-specific stewardship *plans*
- *Involvement of stakeholders and city government*
- Establishment of *information* systems designed for use for future generations

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Teacher's Notes

- Trade-offs: will not happen until stewardship becomes an integral part of remediation planning
- Involvement: very good in OR, less good elsewhere
- Information: in progress. ECF/Kaiser report hard copy - GIS system



Where do you fit into Long-term Stewardship

- Understand the issues
- Stop false rumors
- Ensure that the condition of Oak Ridge Reservation land is properly documented (e.g., property transfers, maps, future land use planning)
- Encourage city oversight of the long-term stewardship program
- Participate in local organizations to ensure that stewardship stays on track and the needs of citizens are met
- Encourage local schools to develop a unit for the civics class (or environmental science class) on the contamination on the Reservation

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Teacher's Notes

End the presentation by stressing that long-term stewardship is an intergenerational responsibility and we must all work together to protect human health & the environment

STRESS that it will be people who are our age who will be affected by the decisions and actions of today

Student Oriented:

- Talk to teachers about learning more about stewardship
- Read the newspapers to stay updated on the issues

